

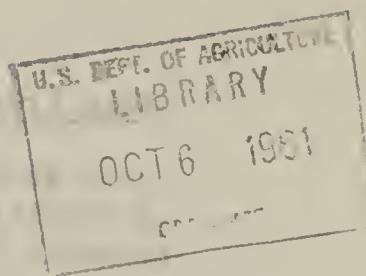
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UNITED STATES DEPARTMENT OF AGRICULTURE  
Rural Electrification Administration  
Washington 25, D. C.



June 1960  
Letter No. 24

Telephone Engineering Information

These information letters are intended to provide a means for answering questions that arise in the field and to inform the field of new developments. They are not intended to be instructions nor to replace in any respect the presently approved channels for establishing requirements and procedures.

TE & CM Sections Distributed Since Letter No. 23 - January 1960

Rev. Section 218, Plant Annual Cost Data  
Add. 1, Section 221, Assignment of Line and Station Numbers (TPS)  
Add. 1, Section 225, Bell System Traffic Agreement  
New Section 500, Telephone Traffic  
Rev. Section 611, Design of Pole Lines  
Add. 1, Section 633, Aerial Distribution Wire, Multipair  
New Section 641, Construction of Buried Plant  
New Section 643, Underground Conduit Design and Construction  
Rev. Section 650, Guys and Anchors for Wire and Cable Lines  
New Section 822, Carrier Circuit Protection  
Rev. Section 825, Situations Requiring Special Protection

Customer Dialing of Person-Person, Collect and Special Instruction Calls

Independent Telephone Manufacturers advertising has created some interest among REA borrowers about customer dialing of person-to-person, collect and special instruction calls, tentatively abbreviated as PPCS. Investigation by REA staff engineers has resulted in the present thinking that there is little likelihood that this service will be found economical for many REA borrowers' toll offices at this stage of its development. It may be that equipment installed now for such service will be revised in a few years.

Revisions of REA Local and Toll Switchboard Specifications

REA Form 558, Local Switchboard Specifications, and REA Form 542, Toll Switchboard Specifications, are being revised to bring them up to date. They should be completed by September 1960. If you have any suggestions to make concerning the revision, please get them in as soon as possible.

### Cable Pressurization

A new TE & CM-646, "Cable Pressurization," is in preparation and should be completed in the fall. The text will include the objectives, probable results, economics, pressurization principles, materials required, methods of installation and testing as applied to both lead-sheath and plastic-jacketed cable.

### Pole Insurance

An Addendum to Form 511, "Telephone System Construction Contract," dated April 27, 1960, has just been released covering the use of insured poles. This addendum is effective for projects bid after July 1, 1960.

### Multipair Aerial Distribution Wire Protection

An addendum to Form 511 also is in preparation to bring the contract and construction specifications into agreement with the requirements of REA TE & CM-821, "Multipair Aerial Distribution Wire Protection," and REA TE & CM-805, "Subscriber Station Protection." This addendum should be issued within the next few weeks and will be effective for projects bid on or after August 1, 1960.

### List of Materials Acceptable

A revised issue of "List of Materials Acceptable for Use on Telephone Systems of REA Borrowers," dated April 1960 has been printed and distributed to the field. This new basic issue replaces the one dated April 1959 including the five bimonthly supplements published subsequent to that date. Bimonthly supplements to this new issue will be published as has been done during the past year.

### Revisions of Specifications PE-15, -17 and -24

These specifications have been revised and are being issued to the field accompanied by a bulletin explaining the major changes and the effective dates for their use.

PE-15, Multipair Aerial Distribution Wire  
PE-17, One Pair Aerial Distribution Wire  
PE-24, Buried Distribution Wire

### Medium-High Density Polyethylene

This new type polyethylene has been made a requirement instead of the "High Molecular Weight" polyethylene previously required in PE-17. The new polyethylene is also known as "Linear" polyethylene. Its superiority lies in the fact that it is 50 to 60 times tougher than its predecessor. Over the years ahead, it is contemplated that usage of linear polyethylene will be extended to multipair distribution wire, cables, etc.

### Long Span Insulated Wire Plant

A recent inspection has been made by REA staff engineers of the long span insulated wire installation at Tyler, Minnesota. This inspection was to determine the effects on this method of construction of the severe ice loads and low temperatures experienced this past winter at the project. As described in the article in the March issue of "Rural Lines" magazine, this system was subjected to severe ice loading, followed by heavy snows which resulted in ice-laden conductors being frozen to the ground and held down by a heavy blanket of snow. Although many of the spans were dug out of the snow over a period of several weeks following the storm, a number of the spans were left buried in the snow and frozen to the ground until the spring thaws - a period of approximately 3-1/2 months.

The field inspection showed that the system had withstood the winter very well. For the most part the conductor had restored itself to substantially its stringing sags. Only a few spans on the system will require resagging.

With the use of the armor rods at tangent and transposition points, the use of preformed deadends in the copper steel conductors, and the use of "armor shunts" at compression splices and compression taps no further fatigue failure problems have been experienced, even though the system was subjected to temperatures as low as  $-40^{\circ}\text{F}$  during the winter.

Although this method of construction appears to be basically sound, it is felt that improved splices and taps are needed and also that development of a fully satisfactory damper is needed before making this method of construction available for general application. Several additional field trials of this method of construction are contemplated during which time these developments can be carried out and field tested before standardizing on this as a fully acceptable method.

### Transistorized Carrier for Cable

The Kellogg and Panhandle companies have developed all-transistor carrier suitable for application to short haul EAS and toll cables. They are for cables having about 250 db attenuation and which can be 15 to 20 miles in length. The frequencies used will be up to 480 kc and 20 to 24 channels will be available. Preliminary costs indicate they will prove in over cable reinforcement. Locations for field trials are desired.

### Load Coil Specifications

A meeting recently was held by REA with manufacturers of load coils at which time basic agreement was reached on the proposed REA load coil specification. These coils are designed for use on both aerial and buried plastic-insulated cable and on rural distribution wire and will have color coded lead-out wires. We hope to finalize this specification shortly and to place it in effect by January 1, 1961.

Line Wire Frost Trouble

Carrier operation interference has been reported due to heavy frost. This was particularly troublesome at point transposition brackets. One method used at these brackets to overcome the trouble is understood to have been the application of pieces of "B" Dampers applied on the short length of wire between the insulators. It will be appreciated if anyone having had this trouble and who used this remedy will make a report on the results.